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RESERVES OF TIME OF POLISH MERCHANT MARINE VESSELS IN HOME PORTS

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The methodology of the analysis of the losses of time of PMH [Polska Marynarka Handlowa -- Polish Merchant Marine] vessels in Polish ports. The volume and main causes of the losses of time of Polish ships in the year 1954, with a division into the individual ports and type of navigation. The analysis of the efficiency of transshipment in relation to the particular cargoes in Polish ports.

The most important reserve of Poland's marine fleet is time. While the sea courses contain relatively small reserves of time, very important reserves exist in the time spent by boats in port. The servicing of a boat in port is made up of several functions. The speed of execution of these depends not only on the qualification standard of the workers involved and the technical equipment but also on the good organization of the work.

Ports visited by Polish vessels may be divided into 2 main groups; home ports and overseas ports. Undoubtedly the servicing of Polish vessels in many foreign ports could be improved. This is due to seasonal or permanent overcrowding of some ports, to bad work organization, or to insufficient technical equipment of some ports. One of the reasons may be also the inefficiency of some port-agents of the PMH who should efficiently coordinate the organization of the various functions necessary for the servicing of vessels in port.

This is the reason why the PMH should and is acting to remove difficulties arising from these causes. The main opportunities that the PMH has of removing inefficiency in this field is the not always possible avoidance of overcrowded or inefficient ports and a good selection of efficient agents and a control of their work. However the possibilities for improvement in this direction can be but small when the functions of our fleet are considered. The fleet cannot on the whole choose its ports but must serve its functions of serving overseas trade.

Consequently in this article we shall omit the analysis of the reserves of time of Polish vessels in foreign ports which would at any rate be purely theoretical. We shall however analyze in detail the reserves of time spent by our vessels in home ports. This section of work of the Polish fleet contains important reserves, can be analyzed in detail, and thus contribute to a better knowledge of the situation and to the correct conclusions.

In contrast to foreign ports, home ports form part of the area completely guided and controlled by the Polish economy. Thus conclusions which seek to make available reserves of time are basically possible to realize.

Method of Analysis

Certain statistical data of the PMH for 1954 were used as analytical material. In view of certain potential differences of the different home ports and as a result of the basically different character of exploitation of the PLO [Polskie Linie Okretowe -- Polish Shipping Lines] and the PZM [Polska Zegluga

Morska -- Polish Sea Fleet], the analytical data is given separately for each of Poland's 3 ports. Furthermore our analytical material is subdivided into types of navigation, namely into ocean lines, European lines, and tramping. We did not group this data in quarters, because quarters are too short periods of time to make observations of the development of the topic under discussion. Also a great danger exists of presenting a false picture as a result of accidental groupings of certain types of vessels or cargo in a certain quarter. Solely the efficiency of the transshipment is given in quarters, because in this case this is more useful and correct.

Table I shows a detailed analysis of the time of stay of Poland's vessels in home ports and is calculated in vessel hours. A serious difficulty always presents itself in the choice of a suitable comparative base for the determination of the percentage relationship of a particular phase of the stay of the vessel in port in relation to a basic unit.

The acceptance as the comparative base of only the entire time of stay of the vessel in port may easily lead to false assumptions and conclusions. (Compare also Miedwiedew J., "O metodikie analizej prostojow floty," Wodnyj Transport [Water Transport], No 112/7954 (editor)). Indeed, with the variable period of stay of particular groups of vessels, the percentage ratio, in spite of a numerical increase, does not necessarily picture in absolute numbers the increased length of a phase of stay of a vessel in port.

On the other hand the suggestion sometimes put forward, of comparison of the particular phases of stay in port with the

~~total time of use of "exploitation"~~ of a vessel is even more incorrect. Vessels with a short cycle of sea trips and consequently with a greater frequency of call at home ports would show a much higher proportion of loss of time in port in relation to total use than vessels with long trip cycles, for example, ocean going vessels.

Such being the case, we chose a method which we consider the most suitable, namely the calculation of the average period of stay in port of a vessel as well as the mean period of duration of a particular phase of stay in port. Independent of this, we give (Table I) the percentage ratio of each phase to the total time of stay in port. The percentage figures and the individual absolute figures in ship-hours do not correspond exactly, because the percentage figures were calculated exactly by the use of total quarterly period ship-hour figures, while the mean figures of time per stay in port were necessarily rounded off to the nearest half-hour. Thus, while the percentage figures are absolutely correct, the averages are only approximately correct. In this way, Table I, while giving a good and clear presentation in absolute average figures, also gives precise percentage proportions. It thus shows in a clear manner the degree of concentration of certain elements, independent of their economic effects.

On the other hand, Table II gives a concrete picture of the effective losses in the potentials of the fleet, according to origin of loss, but omitting losses of time caused by holidays or atmospheric conditions, since the latter 2 categories are classified as unavoidable.

The data of Table II is expressed in terms of t-days of the average gross carrying capacity of individual vessels (weighted

averages). The percentage figures given with the losses of the potential of the fleet due to coal express the relation of these losses to the whole and the losses in time due to the cargo itself.

By way of an explanation, it should be added that the headings of individual columns referring to the losses of time and potential in tables I and II (PMH, ports, etc) refer to the sources of origins of these losses. Auxiliary servicing time means the time besides the loading and unloading necessary for the servicing of a vessel in port (mooring, customs, etc).

Table III contains practical net loading and unloading rates for the individual basic types of cargoes divided into ports and quarterly periods. These rates have been expressed in metric t per 24 hours.

Analysis of Time of Stay in Port

In Table I we see immediately the characteristic arrangement of the shipping tonnage according to the type of business of the vessels. All the ocean lines as well as most of the arrivals of the vessels of the European lines are concentrated in Gdynia and Danzig. On the other hand, somewhat fewer of the vessels of the European lines as well as the main portion of the tramps are grouped in Stettin. This pattern has an important influence on the degree of concentration of a certain type of loss of time in the different ports.

The time taken for auxiliary servicing of vessels, especially of vessels of the European lines, is considerably longer in Stettin than in Gdynia or Danzig, mainly due to the greater length of time necessary for entry and exit of the vessels anchoring at Stettin.

Because of the geographical position of this port the total time required to take a ship in and out of Stettin is about 10 hours, whereas in Gdynia and Danzig the average time is about 2 hours.

The average time of stay in port of vessels of the European lines is higher in Gdynia and Danzig than in Stettin and is equivalent to 108 hours in Gdynia, 120 in Danzig, and 60 in Stettin. The main reason for this is the fact that in Gdynia and Danzig greater quantities of cargo are loaded and unloaded per vessel than in Stettin. The biggest and most time consuming vessels of the European lines, namely the so-called Levantine vessels are serviced mostly by the port of Danzig and that is why the average loading and unloading time is the longest for this port.

The longer period of stay in port of tramps in Gdynia and Danzig than in Stettin can be accounted for by the bigger tonnage tramps being directed towards Gdynia and also partly Danzig.

Losses of Time Due to the Fault of the PMH and of the Ports

The magnitude of the total loss of time varies greatly in the different ports. Gdynia is the worst from this point of view. The average loss of time per one stay in port for vessels of the ocean lines is 78 hours whereas in Danzig it is only 44 hours. This is largely the fault of the port and of the PMH. The losses of time of European line vessels are almost identical for Gdynia and Danzig. On the other hand in Stettin these losses of time for European line vessels are incomparably lower.

Subdividing in turn the losses of time due to the fault of the PMH, that is, into those due to the administration of the PMH and to the crews of the vessels, we see 2 outstanding figures, namely ocean lines in Gdynia and tramps in Stettin.

The exceptionally high loss of time due to the PMH of the ocean going vessels is due largely to the very long repair stay in port of the "Boleslaw Prus" in the Fourth quarterly period in 1954.

Independent however of this cause, serious losses of time occur with vessels of ocean going lines through the fault of the PMH (technical causes), when these undergo serious repairs between long ocean trips.

From this point of view, European line vessels of the PLO in Gdynia and Danzig do not show much loss of time. On the other hand serious losses through the fault of the PMH due to technical causes occur in Stettin both in ocean liners and in tramps. It appears that the necessity for frequent repairs on old and technically incompetent tramps is largely responsible for this state of affairs in Stettin.

In spite of these explanations, it appears that there is room for improvement of the efficiency of organization of the technical services of the PLO and the PZH as well as their cooperation with the crews of the vessels concerned. This is especially true when considering the need for an immediate beginning of repair work on arrival of a vessel in port. Also it is likely that there is room for improvement in the organization of fitting repair workshops.

Besides technical reasons, important delays are due to organizational causes. Two basic causes contribute to this, a too late mustering of the crew as well as lack of organization in time of authority ashore.

The first of these reasons frequently happens in Stettin where delays of a few hours often occur while the crew is being mustered.

On the other hand the FLO has on occasions held a vessel inactive while awaiting orders from the port authorities. Some delays due to this cause were very long, as long as scores of hours. These would almost always occur when vessels were transferred from time-charters (fishing) or from one enterprise to another. This is the largest single contributing cause of the time losses in port of the fleet. The high values of these losses are striking in ocean line vessels in Gdynia and Danzig, especially in Gdynia, with European line vessels in Danzig, and with tramps in Stettin.

Almost all these big losses of time through the fault of the ports were due to organizational reasons. In Gdynia and Danzig there existed above all a lack of longshoremen. A second cause in connection with ocean lines in Gdynia and Danzig is the insufficient number of older pilots entitled to guide large vessels in and out of port. Consequently these vessels frequently await a pilot.

In Stettin, besides seasonal shortages of labor, tramps frequently waste time awaiting anchorage space. Ocean liners with permanent bases are much better off from this point of view.

One of the main causes of waste of time due to technical deficiencies of the ports in Gdynia and Danzig is the shortage of towing boats, which causes boats to wait for towing. This does not occur in Stettin.

Losses of Time Due to Cargo or Railroads

Cargo is responsible for serious losses in time, especially in Stettin. This is mainly caused by delays in delivery of coals, which is shown in Table II, in the calculation of potential losses. This is seen at a glance from figures referring to tramps in all 3 ports.

Losses of time due to wood and small cargo in European lines, especially in Gdynia, are of lesser importance.

The main cause of losses in time due to the PKP, is due to the failure to deliver on time wagon loads of coal, which together with the inadequateness of storage space causes the delay in boat loading. However on the whole losses due to the PKP are not of great importance.

Losses due to other causes are likewise of minor importance. In this category may be included waiting for the discharge of port formalities and night interruptions in the work of the "Pageda," which interrupt the loading of timber.

The Influence of the Losses of Time on the Fleet Potential

As we said previously, the data given in Table I only show the extent and importance of certain phases of the stay in port of a vessel, independent of its exploitation and economic effects.

On the other hand, Table II expresses in accurate figures t-days (weighted averages) of losses in fleet potential due to losses of time shown in Table I. The data in Table II is especially interesting because it shows the sensitive points from the point of view of economic importance caused by the various categories of loss of time. From this table it is evident that losses of time

which dominate Table I are not necessarily the ones which cause the greatest loss in fleet potential and vice-versa. It must be remembered nevertheless that it is the economic losses that are of greatest interest to us.

For example, it can be seen that the very serious losses due to the coal cargo in relation to the entire tramp fleet are only half as important as losses due to the poor organization of our ports.

The fleet potential lost through the fault of the PMH is of great importance since it makes up 26.9% of the total fleet potential loss for the 3 ports. The loss due to the PMH is glaringly evident here, since it amounts to 88.5% of the total fleet potential losses. It should be emphasized again however that the prolonged repairs of the vessel "Boleslaw Prus" in the Fourth quarterly period of the year 1954 had a decisive influence on this factor. This vessel alone caused a loss of 189,333 t-days in the total of 554,075 t-days losses in the fleet potential in all 3 ports and the 3 types of navigation in 1954. After a correction for this single factor the percentage loss in fleet potential due to the PMH would be reduced from 26.9% to 19.5%. Of course the importance of losses from other causes would rise, namely due to the fault of the ports to 40.6%, due to the cargo to 27.7%, due to the PKP to 8.6%, and other causes to 3.6%.

Losses due to the functioning of the ports occupy an important position. Here as in losses in potential due to the PMH, the most important losses occur in ocean lines in Odynia and in the tramps in Stettin. Losses pertaining to European line vessels in Odynia and Densig also are of considerable importance.

The shortage of labor played a decisive role here. The inefficiency of ports however plays a particularly great role with ocean going liners, since these are Poland's greatest vessels and thus cause a proportionately large fleet potential loss.

The third (in magnitude) loss, and after the correction of the "Boleslaw Prus" the second magnitude loss, is the category of losses due to the cargo itself. It is characteristic that we do not see these losses at all in Danzig while they do occur in Gdynia. In Gdynia they are unexpectedly high, being 53.8% of the total fleet potential.

The most important losses due to the nature of the cargo are those of tramps, this being of course of greatest importance in Stettin. This is caused by coal cargoes. Slight delays in loading overloads the regular lines. From this presentation, the importance of the efforts of the PMH to deliver on time coal to the ports is evident.

It is evident that our fleet loses an important portion of its productive potential due to insufficient knowledge, and above all insufficient use of the reserves of time in the stay of our vessels in home ports.

To picture these losses in an easily understandable form, from a strictly exploitation point of view, that is, neglecting the question of costs, the following can be seen.

The losses in fleet potential due to the fault of the PMH (without the accident of the "Boleslaw Prus"), which occurred in 1954, amount to the removal from use for a period of one year, (35 days for yearly repairs) of a vessel 1,105 t or a vessel only slightly smaller than the "Warmis."

Losses in fleet potential due to the ports are equivalent to tying down (or putting out of action) for a period of a year of a vessel with the tonnage of 2,302 t or only slightly smaller than the "Wroclaw."

Losses in fleet potential due to the cargo are equivalent to the removal from exploitation for a period of one year of a vessel with the tonnage of 1,575 t, and to the coal alone of 1,180 t or of greater size than the "Oksywie."

The entire loss of fleet potential due to avoidable causes is equivalent to the removal from exploitation of a vessel of 6,248 t or of a size approaching that of the vessels "General Walter" and "Mickiewicz."

The above figures speak for themselves, and up till now we have not done nearly enough to increase the efficiency of servicing of Polish vessels in home ports. The most important causes which may be remedied are those due to port service and secondly those due to coal cargo. The magnitude of losses due to the PMH is also disquieting. Special attention should be concentrated on increasing the efficiency of repairs between courses and also staff services and exploitation of the PMH services in general.

As an additional illustration of the working of Poland's ports we also present in Table III actual net rates of loading and unloading (after deduction of all interruptions in loading and unloading) for several types of cargoes subdivided into ports and quarterly periods. From this short exposition we see that Stettin is quicker than Gdynia and Danzig in loading and unloading of such cargo as coal, coke, ore, superphosphates, cement, and grain. On the other hand, it is slower in handling timber, miscellaneous cargo, and miscellaneous cargo combined with mass handled goods.

Danzig handles timber with the greatest speed. However this is still too slow a rate.

Odynia has the best results with the handling of miscellaneous goods and miscellaneous goods in combination with mass handled goods. In calculating the loading and unloading rates for miscellaneous goods, time necessary for attaching of heavy articles and the occasionally needed transfers from one crane to another were calculated.

TABLE I. ANALYSIS OF THE TIME OF STAY IN PORT OF VESSELS OF THE PPH

Type of Navigation	No of Ships in Port	Average Time in Port Hours	Time Taken to		Time Taken		Total		Generally		Losses of Time			
			Load and Unload		for Auxil-						Due to the Fault of the PPH			
			hours	%	hours	%	hours	%	hours	%	organization	%	technical	%
Gdynia														
Ocean lines	38	382	279	72.9	25	6.6	78	20.5	22	5.8	2	0.6	20	5.2
European lines	137	108	69	64.1	14	13.1	25	22.8	3	2.8	2	1.6	1	0.7
Tramps	15	123	72	58.2	8	6.9	43	34.9	1	1.2	1	1.2	-	-
Total	190	164	111	67.8	16	9.7	37	22.4	7	3.8	2	1.1	5	2.8
Danaig														
Ocean lines	20	259	190	73.1	25	9.8	44	17.0	9	3.4	3	1.3	6	2.1
European lines	61	120	82	68.3	12	10.1	26	21.6	3	2.7	3	2.7	-	-
Tramps	23	115	63	54.7	19	16.5	33	28.7	3	2.2	3	2.2	-	-
Total	104	145	98	67.6	16	11.1	31	21.3	4	2.9	3	2.2	1	0.7
Stettin														
European lines	121	69	33	48.4	21	30.0	15	21.5	4	5.2	1	1.3	3	3.9
Tramps	139	111	48	43.0	19	17.0	44	40.0	8	7.5	2	2.1	6	5.4
Total	260	92	41	44.9	20	21.6	31	33.5	6	6.7	2	1.8	4	4.9

LOSSES OF TIME

(TABLE I CONTINUED)

Type of Navigation	Due to the Fault of the Ports				Due to the Fault of the Cargo		Due to the Fault of the PKP		Other Causes		Holidays and Interruptions Due to Atmospheric Conditions			
	generally hours	organi- %	techni- %	cal %	hours	%	hours	%	hours	%	hours	%		
Odynia														
Ocean lines	22	5.6	18	4.7	4	0.9	2	0.5	2	0.6	2	0.6	28	7.4
European lines	7	6.5	6	5.6	1	0.9	5	4.3	0.3	0.3	0.7	0.6	9	8.8
Tramps	9.5	7.7	8.5	6.9	1	0.8	20	16.2	6.0	4.5	0.5	0.4	6	4.9
Total	10	6.1	8	5.2	2	0.9	5	3.2	1	0.7	1	0.6	13	7.9
Dankig														
Ocean Lines	16	6.2	12	4.7	4	1.1	-	-	4	1.5	1	0.5	14	5.4
European lines	11	9.0	10	8.2	1	0.8	1	1.1	-	-	1	0.8	10	8.0
Tramps	5	4.7	5	4.6	-	0.1	10	8.4	7	6.2	2	2.0	6	5.3
Total	11	7.3	9.5	6.4	1.5	0.9	3	2.0	1.5	1.6	1.5	0.9	10	6.6
Stettin														
European lines	3	4.6	3	4.1	-	0.5	3	4.6	-	0.1	1	1.4	4	5.4
Tramps	10	9.2	9	8.1	1	1.1	20	18.4	2	1.4	1	1.1	3	2.4
Total	7	7.6	6	6.7	1	0.9	13	13.6	1	0.7	1	1.2	3	3.5

TABLE II. LOSSES OF POTENTIAL IN THE PMH RESULTING FROM STAYS IN POLISH PORTS

Losses Due to Type of Navigation	PMH		PORTS		CARGO		PKP		OTHER		TOTAL			
	t-days	%	t-days	%	together	% of this coal Gdynia	t-days	%	t-days	%	t-days	%		
Ocean Lines	283,905 88.5%	45.0	271,647 77.2%	43.1	22,106 16.6%	3.5	-	34,995 67.5%	5.6	17,522 64.9%	2.8	630,175 69.3%	100	
European Lines	32,596 10.2%	16.1	81,491 22.4%	41.7	71,645 53.8%	35.3	-	5,287 10.6%	2.7	8,462 31.4%	4.2	202,681 22.3%	100	
Tramps	4,062 1.3%	5.3	20,504 5.4%	26.9	39,346 29.6%	51.6	-	11,337 21.9%	14.9	1,012 3.7%	1.3	76,261 8.4%	100	
Total	320,563 100%	35.4	376,642 100%	41.4	133,097 100%	44.6	41,899 31.5	51,819 100%	5.7	26,996 100%	2.9	909,117 100%	100	
<u>Danzig</u>														
Ocean Lines	57,609 66.8%	28.1	104,904 51.8%	51.3	-	-	-	31,170 38.4%	15.2	10,937 57.0%	5.4	204,620 47.3%	100	
European Lines	15,044 17.4%	13.6	78,830 39.0%	71.3	9,703 22.2%	8.8	-	96 0.2%	0.1	6,926 36.1%	6.2	110,599 25.6%	100	
Tramps	13,593 15.8%	11.6	18,544 9.2%	15.8	33,928 77.8%	29.0	-	49,757 61.4%	42.5	1,321 6.9%	1.1	117,143 27.9%	100	
Total	86,246 100%	19.9	202,278 100%	46.8	43,631 100%	10.1	14,694 33.7	81,023 100%	18.7	19,184 100%	4.5	432,362 100%	100	
<u>Stettin</u>														
European Lines	17,556 11.9%	40.5	12,022 6.7%	27.7	10,480 3.1%	24.2	-	443 0.5%	0.3	3,172 14.5%	7.3	43,373 6.0%	100	
Tramps	129,710 88.1%	19.2	168,584 93.3%	24.9	332,561 96.9%	47.4	-	27,463 99.5%	4.1	18,685 85.5%	2.7	677,003 94.0%	100	
Total	147,266 100%	20.4	180,606 100%	25.1	343,041 100%	47.6	332,667 97.0	27,606 100%	3.8	21,857 100%	3.1	720,376 100%	100	
<u>Inclusive</u>														
	554,005	26.9	759,526	36.8	519,769	25.2	389,260	74.9	160,448	7.8	68,037	3.3	2,061,855	100

TABLE III. LOADING AND UNLOADING IN POLISH PORTS

	Coal	Coke	Ore	super phosphates and cement <u>Gdynia</u>	Timber	Grain	Miscellane- ous Cargo	Miscellaneous + mass handled
First quarter	1,313	-	2,036	821	-	-	481	671
Second quarter	-	-	2,244	662	-	1,535	490	536
Third quarter	1,874	-	2,465	1,068	347	-	469	878
Fourth quarter	1,500	1,043	2,938	-	-	-	576	1,477
Yearly	1,546	1,043	2,697	895 <u>Danzig</u>	347	1,535	499	1,003
First quarter	-	-	2,271	1,017	464	312	462	1,015
Second quarter	1,080	-	2,651	-	437	1,153	307	874
Third quarter	1,889	-	3,412	814	549	988	422	707
Fourth quarter	2,614	-	2,304	-	524	1,252	544	1,203
Yearly	1,622	-	2,724	972 <u>Stettin</u>	510	1,113	446	893
First quarter	1,959	-	-	1,111	305	1,568	465	1,452
Second quarter	1,785	-	2,414	1,289	493	2,505	404	-
Third quarter	1,858	1,291	3,263	1,108	327	-	376	386
Fourth quarter	2,011	1,232	2,926	-	539	1,234	412	727
Yearly	1,903	1,248	3,052	1,180	444	1,571	413	779